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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/081,800

02/22/2002

Shinichi Nishida

NEC A337

1754

7590

02/28/2004

Norman P. Soloway  
HAYES, SOLOWAY, HENNESSEY,  
GROSSMAN & HAGE, P.C.  
175 Canal Street  
Manchester, NH 03101

EXAMINER

DI GRAZIO, JEANNE A

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 02/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center"><b>Office Action Summary</b></p>	<p>Application No.</p> <p align="center">10/081,800</p>	<p>Applicant(s)</p> <p align="center">NISHIDA ET AL.</p>	
	<p>Examiner</p> <p align="center">Jeanne A. Di Grazio</p>	<p>Art Unit</p> <p align="center">2871</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on Election of November 17, 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 53-112 is/are pending in the application.
- 4a) Of the above claim(s) 1-52 and 113-123 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 53-112 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Priority***

Priority to Japanese Patent Applications 2001-48473 (Feb. 23, 2001) and 2001-350620 (Nov. 15, 2001) is claimed.

### ***Election/Restrictions***

Applicant's election without traverse of Species D (Figures 40 and 41), claims 53-112 in Paper No. of November 17, 2003 is acknowledged.

### ***Claim Objections***

Claim 111 objected to because of the following informalities: The recitation "a gate line which constitutes said gate electrode extends in a zigzag" is contradictory. Although Applicant has the right of lexicographer, said recitation uses terminology inconsistent with that of the art of liquid crystals. A gate electrode typically is in the form of a pad. Examiner is unable to interpret the claim language in light of the specification and drawings. Appropriate correction is required.

Claim 111 objected to because of the following informalities: The recitation "an opening of said first substrate extends in a direction perpendicular to a direction in which said data lines extend" is contradictory and confusing. If the substrate has an opening, then liquid crystal material will leak out from the substrate thereby rendering the device inoperable. Examiner is unable to interpret the claim language in light of the specification and drawings. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 53-112 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Per claims 53-112: Upon careful review of the instant specification, independent claims 53, 111, and 112 contain limitations not enabled by the specification. The limitations not enabled by the specification are the “a first sub pixel area” and “a second sub pixel area” as recited in all of the independent claims. The specification merely introduces these limitations without enabling one of ordinary skill in the art to understand what these limitations mean. In addition, none of the figures appear to point out what is meant by first and second sub pixel regions.

Claims 53-112 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Per claims 53-112: As noted above, with respect to the enablement rejection, first and second sub pixel areas do not reasonably convey to one of ordinary skill in the art any definition as to what these limitations mean. New matter may be an issue.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 53 and 111 rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US 2002/0057411 A1) in view of Hasegawa et al. (US 6,219,019 B1).

Per claims 53 and 111: Kim has, with reference to Figures 9A and 9B, a first substrate (illustrated in Figure 1 as substrate 1), a second substrate located opposing the first substrate (illustrated in Figure 1 as substrate 2), and a liquid crystal layer sandwiched between the first and second substrates (illustrated in Figure 1 as LC 3), wherein the first substrate includes a thin film transistor having a gate electrode (113), a drain electrode (145) and a source electrode (143), a

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pixel electrode each associated to a pixel to be driven (165-167), a common electrode to which a reference voltage is applied (162, 168, 169), data lines (141), a scanning line (not shown), common electrode lines (161), said gate electrode is electrically connected to said data lines, said source electrode is electrically connected to said pixel electrode, and said common electrode is electrically connected to said common electrode lines [0049], said pixel electrode is in a zigzag form and almost equally spaced away from adjacent ones (Figures 9A and 9B), said common electrode is in a zigzag form and almost equally spaced away from adjacent ones (Figures 9A and 9B), said common electrode is composed of a transparent material [0049] and is formed on a layer located closer to the liquid crystal layer than the data lines, said common electrode entirely overlaps said data lines with an insulating layer being sandwiched therebetween except an area where said data lines are located in the vicinity of said scanning lines (Figures 9A and 9B and 0049), said in-plane switching mode active matrix type liquid crystal display device further includes a light impermeable layer is formed on the second substrate or on the first substrate such that the light impermeable layer and said liquid crystal layer are located at the same side with respect to said data lines and that said light impermeable layer faces said data lines (ABS, entire patent), said light impermeable layer is comprised of a black matrix (ABS, entire patent), and said data lines extend in a zigzag along said pixel electrode (Figures 9A and 9B). It may be presumed that the common electrode is electrically connected to said common electrode lines through a contact hole in each of pixels.

It may be presumed that the in-plane switching mode liquid crystal display device of Kim et al., furthermore has two-directional electric fields almost parallel with a surface of said first substrate applied across the pixel and common electrode. It may be presumed, for the purpose of

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the instant examination, that the device of Kim et al., has first and second sub pixel areas to which electric fields of different directions are applied.

Kim does not appear to explicitly specify that the black matrix layer (or multi-layered color layers) has a width smaller than a width of said common electrode overlapping the data lines.

Hasegawa has a liquid crystal display apparatus and method of driving the display whereby a black matrix is formed on an inside of the second substrate (Column 24, Lines 24-25). Furthermore, Hasegawa has a layered color filter formed on a part of the black matrix where the layered color filter is formed into the shape of a column-like projection having length  $7\mu\text{m}$ , width  $4\mu\text{m}$ , and height of  $2\mu\text{m}$  (Id., Lines 24-40). The layered color filter projection of width smaller than that of the transparent common electrode functions as a spacer to maintain distance between first and second substrate (Id.).

Hasegawa is evidence that ordinary workers in the field of liquid crystals would have had the reason, suggestion, and motivation to form a layered color filter projection onto a black matrix where the layered color filter projection has a width smaller than that of the transparent common electrode to function as a spacer for maintaining the distance between first and second substrates.

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Kim in view of Hasegawa to form a layered color filter projection onto a black matrix where the layered color filter projection has a width smaller than that of the transparent common electrode to function as a spacer for maintaining the distance between first and second substrates.

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Claim 112 rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US 2002/0057411 A1) in view of Ono et al. (US 6,356,331 B1).

Per claim 112: Kim has, with reference to Figures 9A and 9B, a first substrate (illustrated in Figure 1 as substrate 1), a second substrate located opposing the first substrate (illustrated in Figure 1 as substrate 2), and a liquid crystal layer sandwiched between the first and second substrates (illustrated in Figure 1 as LC 3), wherein the first substrate includes a thin film transistor having a gate electrode (113), a drain electrode (145) and a source electrode (143), a pixel electrode each associated to a pixel to be driven (165-167), a common electrode to which a reference voltage is applied (162, 168, 169), data lines (141), a scanning line (not shown), common electrode lines (161), said gate electrode is electrically connected to said data lines, said source electrode is electrically connected to said pixel electrode, and said common electrode is electrically connected to said common electrode lines [0049], said pixel electrode is in a zigzag form and almost equally spaced away from adjacent ones (Figures 9A and 9B), and said common electrode is in a zigzag form and almost equally spaced away from adjacent ones (Figures 9A and 9B).

It may be presumed that the in-plane switching mode liquid crystal display device of Kim et al., furthermore has two-directional electric fields almost parallel with a surface of said first substrate applied across the pixel and common electrode. It may be presumed, for the purpose of the instant examination, that the device of Kim et al., has first and second sub pixel areas to which electric fields of different directions are applied.

Kim does not appear to explicitly specify that an isolated floating electrode formed of a layer of which said gate electrode or said drain electrode is formed overlaps said common



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electrode or said pixel electrode at bending portions of said zigzag-shaped common or pixel electrode with an insulting film being sandwiched therebetween and at least one of said common and pixel electrodes have a projection projecting from bending portions of said zigzag-shaped common and pixel electrodes in a direction in which said bending portions project, along a boundary between said first and second sub pixel areas.

Ono teaches and discloses an in-plane switching liquid crystal display device wherein (with reference to Figure 26) a floating electrode overlaps a common electrode and an insulating film is interposed between the pixel and counter (common) electrodes. Ono goes on to teach that since the lines of electric force applied to the liquid crystal are increased by the voltage dividing effect of the protective film a low-resistance type of material can be selected for the material of the liquid crystal so that it is possible to achieve the advantage of obtaining a display that is reduced in image retention (Ono, Column 14, Lines 32-38).

Ono is evidence that ordinary workers in the field of liquid crystals would have had the reason, suggestion, and motivation to incorporate the floating electrode overlapping the common electrode into an in-plane switching device for a display reduced in image retention.

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Kim in view of Ono for a display reduced in image retention.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeanne A. Di Grazio whose telephone number is (571)272-2289.

The examiner can normally be reached on M-F.

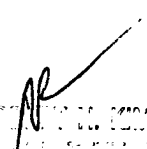
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeanne Andrea Di Grazio

Robert Kim, SPE

Patent Examiner  
Art Unit 2871

  
SUPERVISOR, PATENT EXAMINER  
TECHNOLOGY CENTER 2800